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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,802	11/14/2003	Michael D. Bradfield	D-154	4470
23413	7590	06/20/2005	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			MULLINS, BURTON S	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 06/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/713,802

Applicant(s)

BRADFIELD, MICHAEL D.

Examiner

Burton S. Mullins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-18 and 20-24 is/are rejected.
- 7) ☒ Claim(s) 7 and 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5, 10-15, 17 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oohashi et al. (US 6,424,071) in view of Sandel et al. (US 5,270,604). Oohashi teaches an AC motor vehicle alternator comprising: a stator 34 including a stator winding 35 composed of segmented conductors 30 (Figs.1-2), said stator winding representative of a first phase stator winding of multi-phase stator windings (three phase groups 50) inserted in a plurality of slots 15a defining said stator (c.7, lines 57-67; Fig.3); and a clawpole rotor 7 rotatable within said stator (Fig.5).

Oohashi differs in that the rotor does not comprise "more than two flux carrying segments, each segment having $P/2$ claw poles, wherein P is an even number."

Sandel teaches a tandem field claw-pole rotor including four flux carrying segments 16/18/20/22, each segment having (six) $P/2$ claw poles, wherein P is an even number, i.e., $P=12$ (Fig.1). Tandem field rotors are desired for---among other benefits---generation of more electrical power at lower rotational speeds (c.1, lines 22-25).

It would have been obvious to modify Oohashi and provide a tandem field claw-pole rotor per Sandel since this would have enabled the alternator to generate more electrical power at lower rotational speeds.

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Regarding claims 2-3 and 14-15, note Sandel's two intermediate field coils 91/92 (Fig.5) which inherently generate the claimed first and second magnetic polarities, i.e., N/S poles.

Regarding claims 5 and 17, each conductor 30 of Oohashi comprises a first segment and a second segment comprising each leg of the U-shaped conductor 30 (Fig.2). As seen in Figs.1&3, the first and second segments are inserted into slots 180 electrical degrees apart (for the three phase machine shown).

Regarding claims 10-12 and 22-24, the three windings 50 of Oohashi comprise first-third phase windings 50 (Fig.3; c.7, line 66-c.8, line 6), and each slot is occupied with a plurality of segments from a single phase group 50.

3. Claims 1-3, 5-6, 8-15, 17-18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umeda et al. (US 6,204,586) in view of Sandel et al. (US 5,270,604).

Umeda teaches an AC motor vehicle alternator comprising: a stator 32 including a stator winding 311 composed of segmented conductors 331/332 (Fig.4), said stator winding representative of a first phase stator winding of multi-phase stator windings (c.4, lines 53-54) inserted in a plurality of slots 35 defining said stator; and a clawpole rotor 3 rotatable within said stator (Fig.1).

Umeda differs in that the rotor does not comprise "more than two flux carrying segments, each segment having $P/2$ claw poles, wherein P is an even number."

Sandel teaches a tandem field claw-pole rotor including four flux carrying segments 16/18/20/22, each segment having (six) $P/2$ claw poles, wherein P is an even number, i.e., $P=12$ (Fig.1). Tandem field rotors are desired for---among other benefits---generation of more electrical power at lower rotational speeds (c.1, lines 22-25).

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It would have been obvious to modify Umeda and provide a tandem field claw-pole rotor per Sandel since this would have enabled the alternator to generate more electrical power at lower rotational speeds.

Regarding claims 2-3 and 14-15, note Sandel's two intermediate field coils 91/92 (Fig.5) which inherently generate the claimed first and second magnetic polarities, i.e., N/S poles.

Regarding claims 5 and 17, each conductor of Umeda comprises a first segment 331 and a second segment 332 (Fig.4) in respective first and second slots #10 and #7. The first and second segments are inserted into slots 180 electrical degrees apart (for the three phase machine shown).

Regarding claims 6 and 18, as seen in Fig.4 of Umeda, the first and second segments 331 and 332 extend from a first side (31b) of said stator to a second side (31a) defining said stator, the first segment 331 returning to said first side through said second slot #7, said second segment 332 returns to said first side through a third slot #4. Regarding claims 8 and 20, the third slot #4 is three slots from second slot #7 and six slots from first slot #10 with second slot #7 therebetween. Regarding claims 9 and 21, the segments 331 and 332 are connected on first side 31b to form a single lapped conductor as seen in Fig.4.

Regarding claims 10-12 and 22-24, the three windings of Asao comprise first-third phase windings (c.8, lines 3-9), and each slot is occupied with a plurality of segments from a single phase group (Fig.2).

4. Claims 4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Oohashi or Umeda in combination with Sandel as applied to claims 1 and 13 above, and further

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in view of Kusase (US 5,483,116). Neither Oohashi, Umeda nor Sandel teach permanent magnets between each pole segment.

Kusase teaches a claw pole rotor including facing claw pole cores 7 each comprising respective segments 15 and 16 with teeth (Figs.1-2). Permanent magnets 11 are disposed between circumferential side faces of each segment's tooth (Figs.2&3). The permanent magnets diminish the magnetic flux leakage between the poles (thus improving output) and improve efficiency (c.1, lines 12-27).

It would have been obvious to modify any one of Oohashi or Umeda in combination with Sandel and provide magnets between the segments per Kusase since this would have diminished flux leakage and improved machine efficiency.

Allowable Subject Matter

5. Claims 7 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art, in particular Oohashi and Umeda, do not teach that the first and second segments form respective loops on the second side before returning to the first side.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029.

The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
15 June 1005